

REMARKS

Claims 1-29 are pending in the case, claims 11-18 and 21-22 having been withdrawn from consideration. In the Office Action, the Office:

- objected to claims 1-5 and 19-24 over the use of the term "sweep";
- rejected claims 1-8, 19-20, 23, 25, and 29 as anticipated under 35 U.S.C. § 102 (b) by International Patent Application WO 9706452 ("Bouyoucus"), UK patent application GB 2,148,503 ("Lugg"), United States Letters Patent 5,469,404 ("Barber et al."), United States Letters Patent 5,535,176 ("Yang"), and United States Letters Patent 4,721,180 ("Haughland et al.");
- rejected claims 1 and 6-8 as anticipated under 35 U.S.C. § 102 (b) by United States Letters Patent 4,493,061 ("Ray") or United States Letters Patent 4,136,754 ("Manin");
- rejected claims 1 and 6 as anticipated under 35 U.S.C. § 102 (b) over United States Letters Patent 4,727,956 ("Huizer");
- rejected claims 9-10 and 24 as obvious under 35 U.S.C. § 103 (a) in view of UK patent application GB 2,148,503 ("Lugg"); and
- rejected claims 9-10 and 24 as obvious under 35 U.S.C. § 103 (a) "over any one of" International Patent Application WO 9706452 ("Bouyoucus"), United States Letters Patent 4,721,180 ("Haughland et al."), United States Letters Patent 5,535,176 ("Yang"), United States Letters Patent 5,469,404 ("Barber et al."), in view of UK patent application GB 2,148,503 ("Lugg"); and
- rejected claims 26-28 as obvious under 35 U.S.C. § 103 (a) and United States Letters Patent 4,721,180 ("Haughland et al.").

Applicants traverse each of the rejections.

I. RESPONSE TO INFORMALITIES

Drawings. The Office Action contains no disposition of the drawings. Unless notified to the contrary, Applicant will consider the drawings to have been accepted.

Priority Claim. The Office acknowledges receipt of all papers necessary for the priority claim, and the Applicant considers the claim to priority to have been perfected unless otherwise notified.

Claim Objection. The Office objected to claims 1-5 and 19-24 over the use of the term "sweep". More particularly, the Office states that "...it is questioned whether 'sweep' in claim 1 refers to the controlled frequency characteristics of the transmitted signal over a period of time or whether it refers do the time during which energy is emitted." Office Action, Detailed Action, p. 2, ¶ 3.

Applicant fails to see where the confusion lies. The term "sweep" is a term of art. As explained by the Applicant:

In operation, the frequency of seismic energy emitted by a marine vibrator is varied, or "swept", in a well-defined manner during each operation, or "sweep", of the vibrator.

Specification, p. 1, lines 19-21. A sweep is defined both in terms of frequency control and duration, *i.e.*, period of time in which seismic energy is emitted in a frequency that varies in a defined manner. This is precisely the manner in which Applicant uses the term in the claims.

Should this explanation fail to dispel the Office's concern, Applicant requests clarification as to from where the concern over this term arises.

II. RESPONSE TO SUBSTANTIVE REJECTIONS

The Office has rejected the claims on two different statutory bases and over quite a large number of references. Applicant segregates the response thereto first by the statutory basis of the rejection and then by the references cited.

A. RESPONSE TO THE ANTICIPATION REJECTIONS

The Office rejected each claims 1-8, 19-20, 23, 25, and 29 as anticipated under 35 U.S.C. § 102 (b) over a large number of references. More particularly, the Office:

- rejected claims 1-8, 19-20, 23, 25, and 29 as anticipated under 35 U.S.C. § 102 (b) by International Patent Application WO 9706452 ("Bouyoucus"), UK patent application GB 2,148,503 ("Lugg"), ", United States Letters Patent 5,469,404 ("Barber et al."), United States Letters Patent 5,535,176 ("Yang"), and United States Letters Patent 4,721,180 ("Haughland et al.");
- rejected claims 1 and 6-8 as anticipated under 35 U.S.C. § 102 (b) by United States Letters Patent 4,493,061 ("Ray") or United States Letters Patent 4,136,754 ("Manin"); and
- rejected claims 1 and 6 as anticipated under 35 U.S.C. § 102 (b) over United States Letters Patent 4,727,956 ("Huizer").

Applicant traverses each of these rejections, and will address each rejection separately.

The legal standards for each of the anticipation rejections are the same. An anticipating reference, by definition, must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. M.P.E.P. § 2131; *In re Bond*, 15

U.S.P.Q.2d (BNA) 1566, 1567 (Fed. Cir. 1990). "[I]t is incumbent upon the examiner to identify wherein each and every facet of the claimed invention is disclosed in the applied reference." *Ex parte Levy*, 17 U.S.P.Q.2d (BNA) 1461, 1462 (Pat. & Tm. Off. Bd. Pat. App. & Int. 1990).

None of the references teach all the limitations of the independent claims. Each of the independent claims 1, 6, 25, from which claims 2-5, 7-8, 19-20, 23, and 29 depend, recites at least one "marine vibrator" and claim 1 recites "a sweep." The references disclose techniques employing sources other than marine vibrators:

- Bouyoucos teaches air guns at, *e.g.* p. 8, lines 1-12; p. 10, line 25 to p. 11, line 3;
- Lugg teaches "non-resonant implosion sources," *i.e.*, air guns, at, *e.g.*, p. 1, lines 49-72;
- Barber *et al.* teaches air guns at, *e.g.*, the Abstract; col. 3, line 62 – col. 4, line 21; and col. 4, line 61 – col. 5, line 21;
- Yang teaches broadband sources, *i.e.*, air guns and other "non-resonant implosion sources", at *e.g.*, col. 2, lines 22-39; col. 6, lines 39-49;
- Haughland *et al.* teaches "source elements" and arrays thereof that are "typically an air gun", at col. 3, lines 52-57; *see also* col. 5, line 43 to col. 6, line 2;
- Ray teaches the use of "gas expandible marine sources," which it identifies as air guns, at, *e.g.*, Abstract, col. 1, lines 11-13; col. 2, line 31 to col. 3, line 16; col. 5, lines 22-43;
- Manin teaches "seismic sources" generally, but the seismic sources must be something other than marine vibrators since it teaches that seismic sources typically create "...through a violent shock, such as an explosion, a

disturbance...." (col. 1, lines 12-16) and that the seismic sources of the instant invention can be used on land (col. 2, lines 39-43); and Huizer teaches air guns, which the Office concedes (*see also* Abstract ("gun volume"), col. 6, lines 4-35).

None of these references teaches anything to do with marine vibrators. Furthermore, the sources they do teach do not generate sweeps.

Thus, the cited art does not anticipate claims 1-8, 19-20, 23, 25, and 29 because the references—even if taken collectively—fail to disclose all the elements of the claimed invention. *Bond*, 15 U.S.P.Q.2d (BNA) at 1567. At a minimum, the Office has failed to establish that they do teach these limitations, which is a part of the Office's burden, and so the *prima facie* case is deficient. *Levy*, 17 U.S.P.Q.2d (BNA) at 1462. Accordingly, Applicant requests that these rejections be withdrawn.

B. RESPONSE TO THE OBVIOUSNESS REJECTIONS

The Office made two different rejections for obviousness:

- rejected claims 9-10 and 24 as obvious under 35 U.S.C. § 103 (a) in view of UK patent application GB 2,148,503 ("Lugg"); and
- rejected claims 9-10 and 24 as obvious under 35 U.S.C. § 103 (a) "over any one of" International Patent Application WO 9706452 ("Bouyoucus"), United States Letters Patent 4,721,180 ("Haughland *et al.*"), United States Letters Patent 5,535,176 ("Yang"), United States Letters Patent 5,469,404 ("Barber *et al.*"), in view of UK patent application GB 2,148,503 ("Lugg"); and

rejected claims 26-28 as obvious under 35 U.S.C. § 103 (a) and United States Letters Patent 4,721,180 ("Haughland *et al.*").

To establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. § 706.02(j); *In re Royka*, 490 F.2d 981, 180 U.S.P.Q. 580 (CCPA 1974). As was established above, none of these references teaches a "marine vibrator" or a "sweep", as are recited in the independent claims. These rejections therefore are *prima facie* deficient, M.P.E.P. § 706.02(j); *In re Royka*, 180 U.S.P.Q. 580, and Applicant accordingly requests that these rejections be withdrawn.

III. CONCLUDING REMARKS

Applicant respectfully submits that the claims are in condition for allowance and requests that they be allowed to issue.

The Examiner is invited to contact the undersigned attorney at 713-934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,



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